LISTING OF CLAIMS

This listing of claims replaces all previous listings of claims.

1. (Currently Amended) A system for transmission of power and/or information between a first location external of a living body and a second position internal of the living body which comprises:

   (a) a primary controller comprising a power source, a transmitter and a receiver to receive data from the implanted device, locatable at the first location; and

   (b) an antenna based device locatable at the second position to receive an output from the transmitter,

   wherein the power source is adapted to emit high frequency electromagnetic radiation between 0.5 to 5 GHz; and

   wherein the primary controller and the antenna based device do not communicate by inductive coupling.

2. (Previously presented) The system according to claim 1 wherein the power source in the primary controller is adapted to emit high frequency radiation between 0.8 to 2.5 GHz.

3. (Previously presented) The system according to claim 1 wherein the antenna based device comprises an antenna which has a planar omnidirectional format and is integrated into the construction of the antenna based device.

4. (Previously presented) The system according to claim 1 wherein the antenna based device comprises an antenna which has a format selected from the group consisting of a simple dipole, a loop with or without crenellations, or a microstrip antenna including slot and patch formats.

5. (Previously presented) The system according to claim 1 wherein the primary controller further comprises other devices.

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7. (Previously presented) The system according to claim 1 wherein the antenna based device further comprises means to monitor predetermined conditions adjacent the antenna based device and to emit signals representative of one or more of these conditions to be received by the primary controller.

8. (Previously presented) The system according to claim 1 wherein the antenna based device further comprises means to generate pulses of current.

9. (Previously presented) The system according to claim 1 wherein the antenna based device is a medical appliance.

10. (Previously presented) The system according to claim 9 wherein the antenna based device is a stent.

11. (Currently amended) A method for transmitting power and/or information between a first location external of a living body at which a primary controller is located, wherein the primary controller comprises [comprising] a power source, a transmitter and a receiver to receive data from an antenna based device, [at a second position, is located] and a [the] second position internal of the living body at which the antenna based device is located, the method comprising the steps of:

(a) generating high frequency electromagnetic radiation between 0.5 to 5 GHz from the power source and emitting that radiation from the transmitter of the primary controller, and

(b) receiving the radiation at the antenna based device;

wherein the primary controller and antenna-based device do not communicate by inductive coupling.

12. (Previously presented) The method according to claim 11 wherein the high frequency radiation in step (a) is 0.8 to 2.5 GHz.

13. (Previously presented) The method according to claim 11 wherein the method comprises further steps of:

(c) powering the antenna based device with the radiation; and/or

(d) causing the antenna based device to generate and emit pulses of current; and/or

(e) monitoring predetermined conditions adjacent to the antenna based device and emitting signals representative of one or more of these conditions to be received by the primary controller.

14. (Withdrawn) A medical appliance comprising a spring-based stent incorporating a monitoring device wherein the spring of the stent acts as the aerial for the monitoring device and wherein the medical appliance is capable of receiving electromagnetic radiation with a frequency between 0.5 to 5 GHz.

15. (Withdrawn) A medical appliance according to claim 14 wherein the monitoring device is located in the support of the stent.

16. (Withdrawn) A medical appliance according either of claims 14 or 15 wherein the monitoring device further comprises means to monitor predetermined conditions in the vicinity of the medical appliance.

17. (Withdrawn) A medical appliance according to any one of claims 14 to 16 wherein the monitoring device works in conjunction with a primary controller.

18. (Withdrawn) A medical appliance according to claim 17 wherein the monitoring device further comprises means to emit signals representative of one or more of these conditions to be received by the primary controller.

19. (Withdrawn) A medical appliance according to either of claims 17 or 18 wherein the primary controller is separate and located outside the body in which the stent is implanted.

20. (Withdrawn) A medical appliance according to any one of claims 17 to 19 wherein the primary controller is a power source for the monitoring device.

21. (Withdrawn) A medical appliance according to claims 17 to 20 wherein the primary controller is adapted to emit high frequency electromagnetic radiation between 0.5 to 5 GHz.

22. (Withdrawn) A medical appliance according to any one of claims 17 to 21 further comprising an intermediate implant which relays the power and instructions from the primary controller device to the medical appliance.

23. (Withdrawn) An artificial muscle stimulation system comprising:

(a) at least one stimulating device for providing artificial electrical stimulation to a muscle under control of a primary controller capable of transmitting high frequency electromagnetic radiation between 0.5 to 5 GHz;

(b) an electromyogram sensor for measuring electromyogram signals from the muscle during stimulation; and

(c) a neural network processor coupled to receive the measured electromyogram signals to extract information regarding force of contraction and fatigue of the muscle;

wherein the primary controller is coupled to an output of the neural network processor to control said artificial electrical stimulation based on said extracted information.

24. (Withdrawn) A method for implementing an artificial stimulation system which comprises an electromyogram recorder, an intelligent signal processor and an artificial stimulation controller capable of transmitting high frequency electromagnetic radiation between 0.5 to 5 GHz comprising the steps of:

(a) performing a training phase under supervision wherein a fixed stimulation pattern is applied to different electrodes in the same muscle; electromyogram recordings are memorized by the neural network against the muscle contraction pattern; and the system learns the correlation of the electromyogram signal, force and fatigue;

(b) thereafter, recording the force of contraction when the same muscle is stimulated with different pulse shapes and amplitudes;

(c) correlating the time electromyogram wave shape and spectrum of electromyogram signals received from the muscle being stimulated with force of contraction and fatigue; and

(d) changing the pulse shape and rate of stimulation in order to achieve a constant muscle contraction.

25. (Withdrawn) A method for transmitting information from a primary controller to an antenna based device comprising the step of using a power signal as a carrier for the information signals.

26. (Previously presented) The system according to claim 10 wherein the stent is spring-based and the spring of the stent acts as an antenna, and wherein the stent incorporates a monitoring device.

27. (Previously presented) The system according to claim 26 wherein the monitoring device is located in the support of the stent.

28. (Previously presented) The system according to claim 26 wherein the monitoring device further comprises means to monitor predetermined conditions in the vicinity of the stent.

29. (Previously presented) The system according to claim 26 wherein the monitoring device works in conjunction with the primary controller.

30. (Previously presented) The system according to claim 26 wherein the monitoring device further comprises means to emit signals representative of one or more of these conditions to be received by the primary controller.

31. (Previously presented) The system according to claim 26 further comprising an intermediate implant which relays power and/or information from the primary controller to the stent.

32. (Previously presented) The system according to claim 9 wherein the medical appliance is a stimulating device for providing artificial stimulation to a muscle.

33. (Previously presented) The system according to claim 32 further comprising an electromyogram sensor for measuring electromyogram signals from the muscle during stimulation and a neural network processor coupled to receive the measured electromyogram signals to extract information regarding force of contraction and fatigue of the muscle, wherein the primary controller is coupled to an output of the neural network processor to control said artificial electrical stimulation based on said extracted information.

34. (Previously presented) A method for implementing the system according to claim 33 comprising the steps of:

(a) performing a training phase under supervision wherein a fixed stimulation pattern is applied to different electrodes in the same muscle; electromyogram recordings are memorised by the neural network against the muscle contraction pattern; and the system learns the correlation of the electromyogram signal, force and fatigue;

(b) thereafter, recording the force of contraction when the same muscle is stimulated with different pulse shapes and amplitudes;

(c) correlating the time electromyogram wave shape and spectrum of electromyogram signals received from the muscle being stimulated with force of contraction and fatigue; and

(d) changing the pulse shape and rate of stimulation in order to achieve a constant muscle contraction.